

LMN7002Y 60V N-Channel Enhancement Mode MOSFET

Features

- 60V/0.5A, $R_{DS(ON)} = 3.0\Omega @ V_{GS} = 10V$
- 60V/0.3A, $R_{DS(ON)} = 4.0\Omega @ V_{GS} = 4.5V$
- Fast Switch
- ESD Protection (2KV) Diode design-in
- Green Device Available

These devices are particularly suited for low voltage power management, such as smart phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

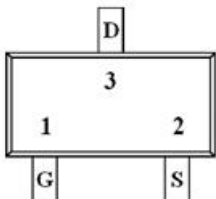
Product Description

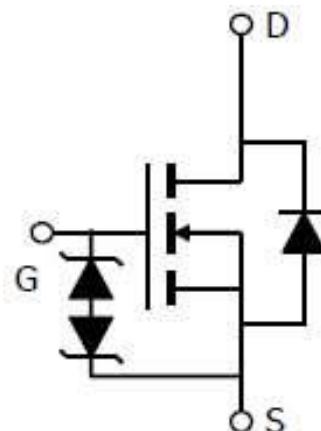
LMN7002Y, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

Applications

- Load Switch
- Notebook
- Battery Protection
- Hand-held Instruments

Pin Configuration

LMN7002YX7F (SOT-523)	
 Top Views	
Pin	Description
1	Gate
2	Source
3	Drain



Ordering Information

Part Number	P/N	PKG Code	Pb Free Code	Package	Quantity Reel
LMN7002YX7F	LMN7002Y	X7	F	SOT-523	3000 pcs

Marking Information

Part Marking	Part Number	LFC code
J XW	J	XW

Absolute Maximum Ratings

(T_C=25°C Unless otherwise noted)

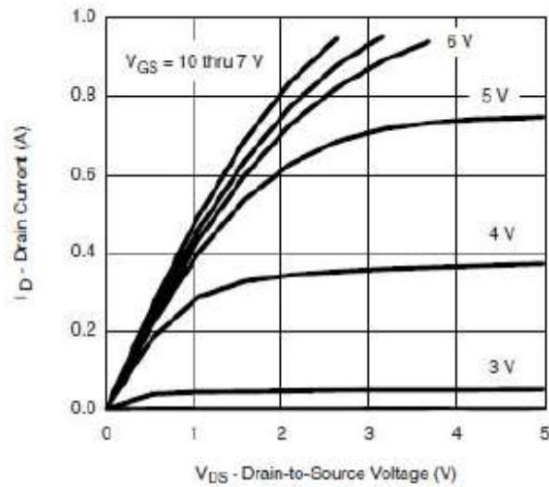
Symbol	Parameter		Typical	Unit
V _{DS}	Drain-Source Voltage		60	V
V _{GS}	Gate-Source Voltage		±20	V
I _D	Continuous Drain Current	T _A =25°C	0.24	A
		T _A =70°C	0.20	
I _{DM}	Pulsed Drain Current		1.2	A
P _D	Power Dissipation	T _A =25°C	0.30	W
		T _A =70°C	0.19	
T _J	Operating Junction Temperature Range		-55 to +150	°C
T _{STG}	Storage Temperature Range		-55 to +150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient		417	°C/W

Electrical Characteristics

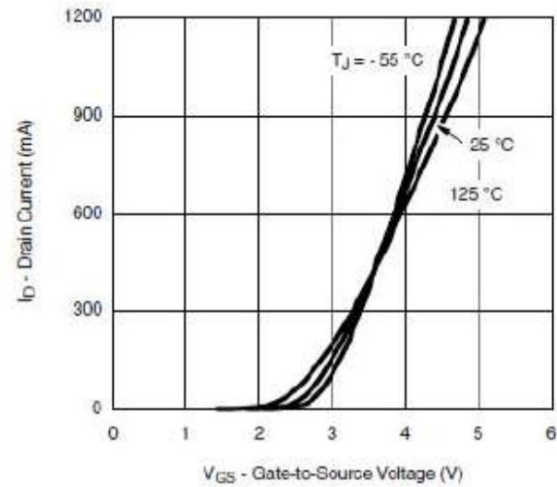
(T_J=25°C Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	60			V
V _{GS} (th)	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.0		2.0	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±10	uA
I _{DSS}	Drain-Source Leakage Current	V _{DS} =60V, V _{GS} =0V			1	uA
		V _{DS} =60V, V _{GS} =0V, T _J =85°C			30	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			450	mA
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =0.5A		1.9	3.0	Ω
		V _{GS} =4.5V, I _D =0.3A		2.4	4.0	
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =0.2A		0.2		S
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =0.2A		0.7	1.3	V
Dynamic						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz		30		pF
C _{oss}	Output Capacitance			8		
C _{rss}	Reverse Transfer Capacitance			5		
Q _g	Total Gate Charge	V _{DS} =10V, V _{GS} =4.5V, I _D =0.25A		500		pC
Q _{gs}	Gate-Source Charge			100		
Q _{gd}	Gate-Drain Charge			150		
t _{d(on)}	Turn-On Time	V _{DD} =30V, I _D =0.2A, V _{GS} =4.5V, R _L = 150Ω, R _G =10Ω		10	20	ns
T _r				35	50	
t _{d(off)}	Turn-Off Time			20	30	
T _f				40	60	

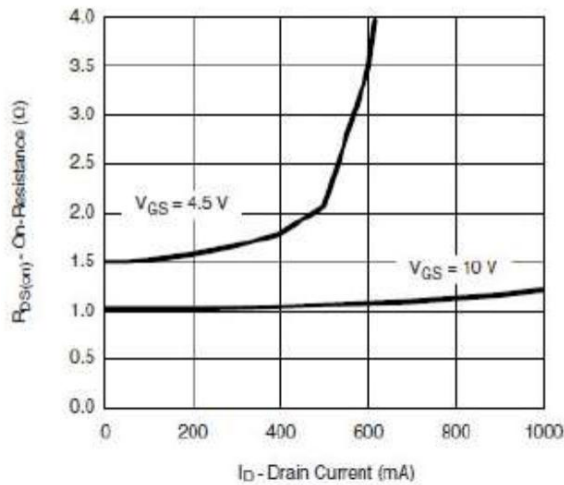
Typical Performance Characteristics



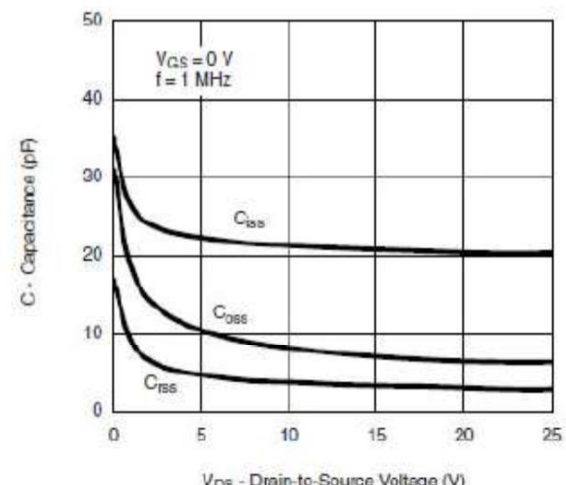
Output Characteristics



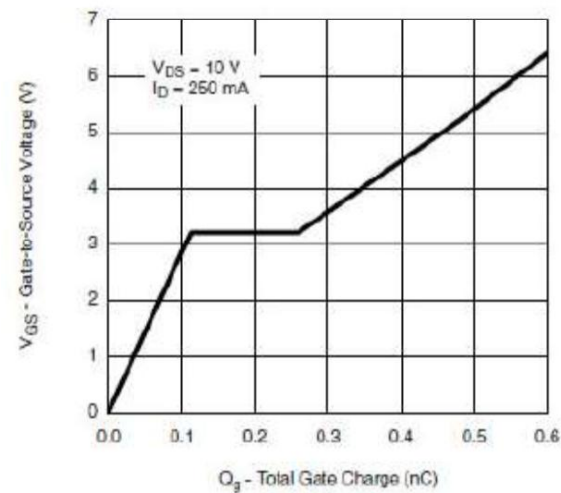
Transfer Characteristics



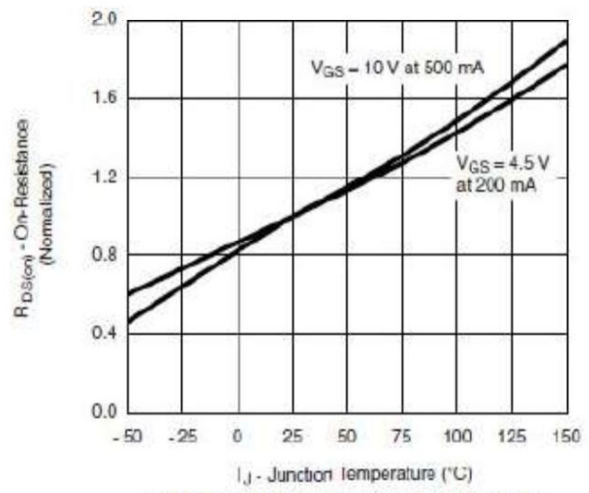
On-Resistance vs. Drain Current



Capacitance

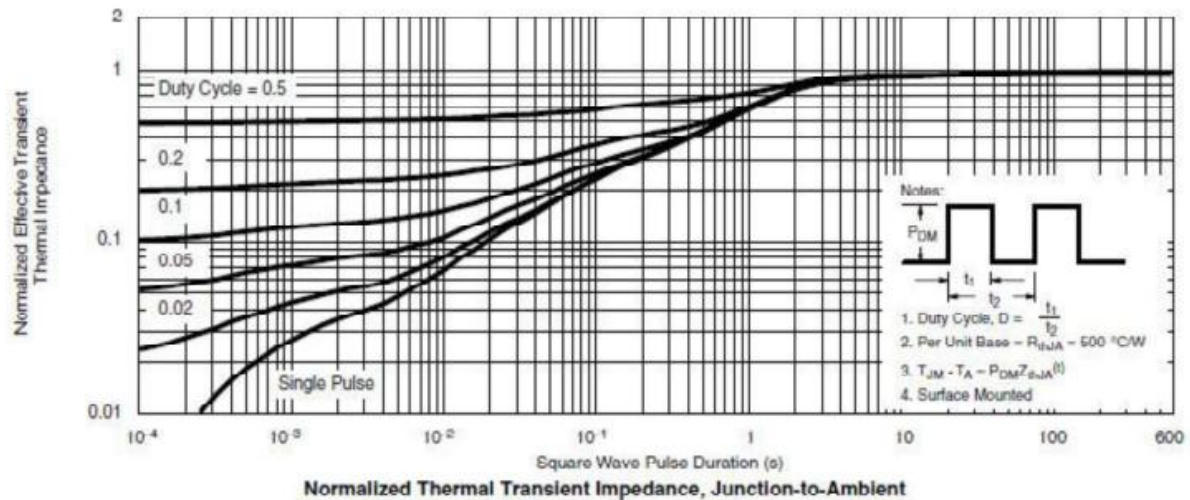
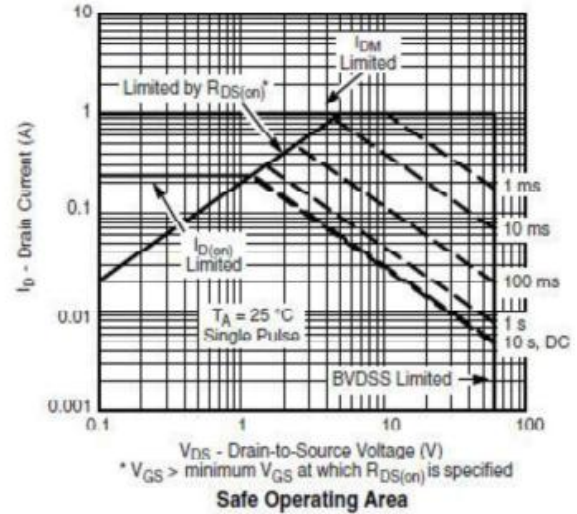
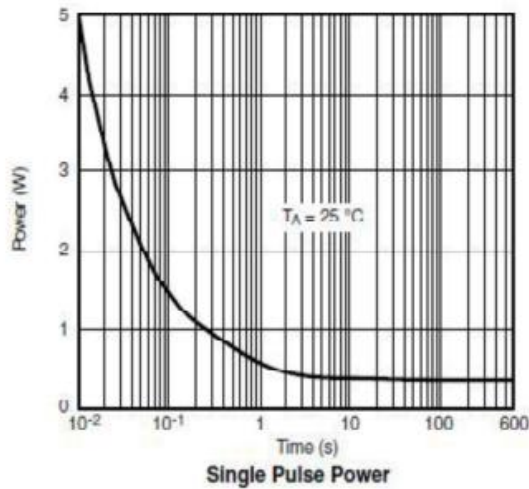
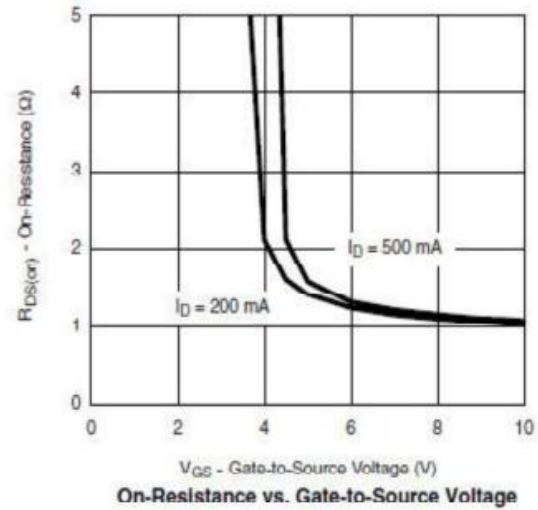
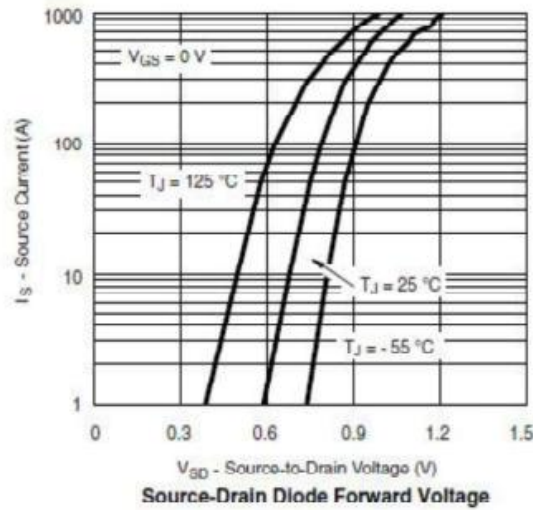


Gate Charge



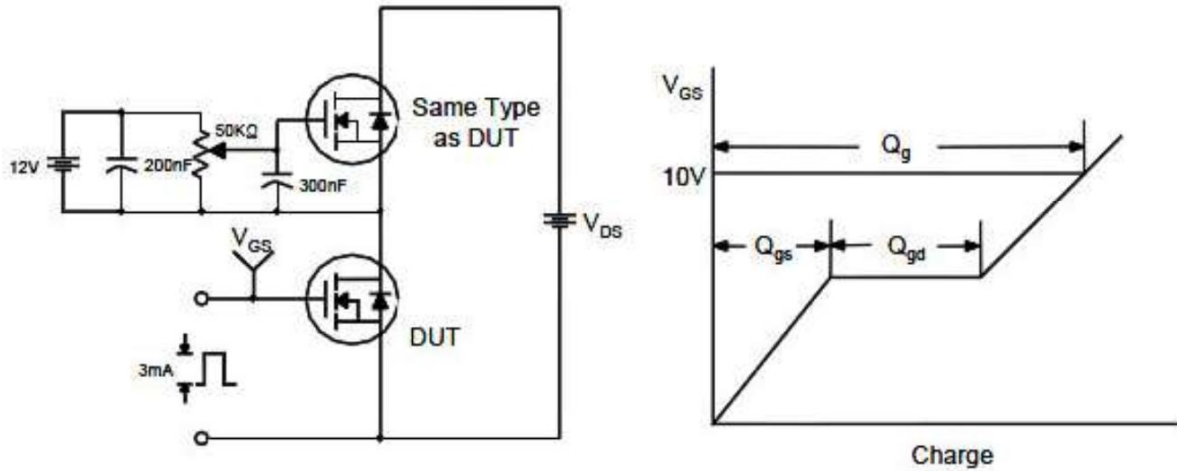
On-Resistance vs. Junction Temperature

Typical Performance Characteristics (continue.)

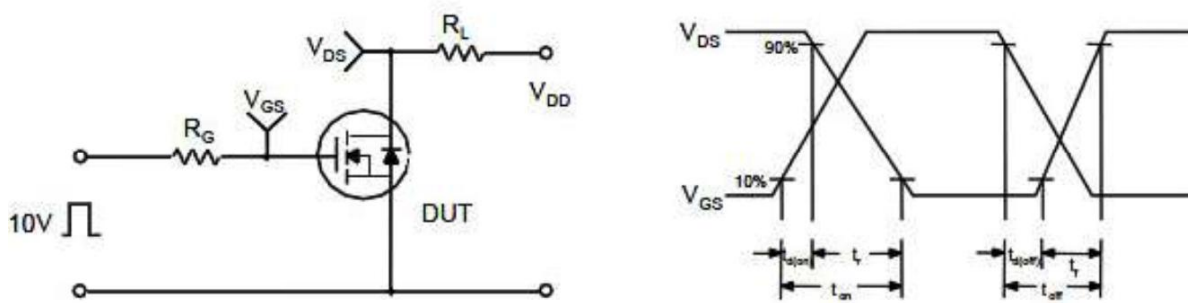


Typical Characteristics

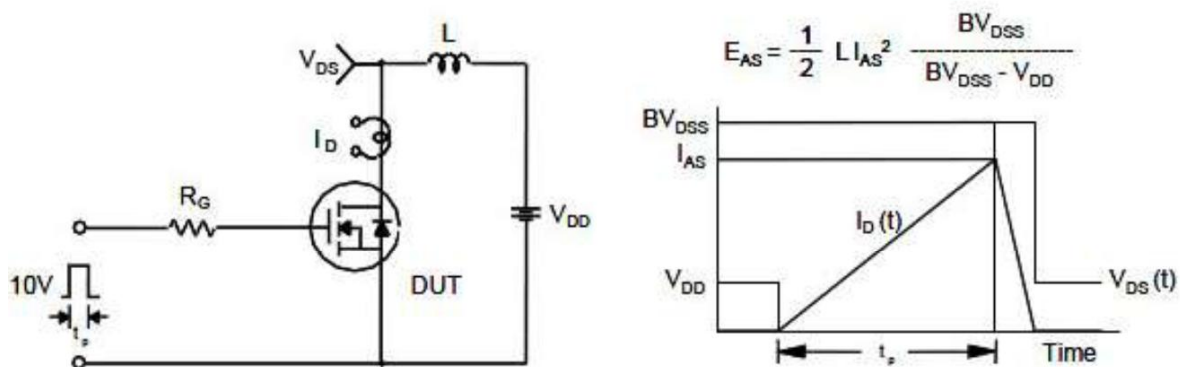
Gate Charge Test Circuit & Waveform

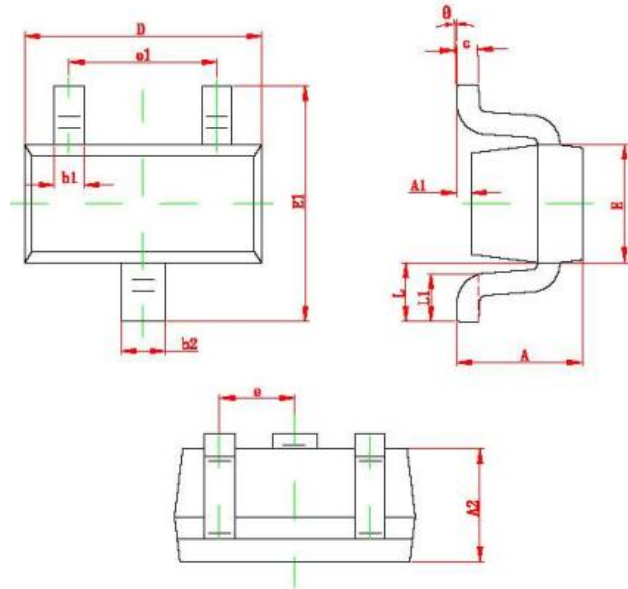


Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension
SOT-523


Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.325	0.010	0.013
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.750	0.850	0.030	0.033
E1	1.450	1.750	0.057	0.069
e	0.500 TYP		0.200 TYP	
e1	0.900	1.100	0.035	0.043
L	0.550 REF		0.022 REF	
L1	0.280	0.440	0.011	0.017
θ	0°	4°	0°	4°